

Descriptions of Three New Thrips from Japan.

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Astrothrips aucubae sp. nov.

(Fig. 1, 1—4.)

(Japanese name: *Aoki-azamiuna*)

Female :—Measurements in mm. : Total body-length 1.313. Head 0.123 long by 0.193 wide. Prothorax 0.123 long by 0.210 wide. Pterothorax 0.123 in width. Fore femur 0.123 in length and 0.040 in width. Fore tibia including tarsus 0.158 long by 0.032 wide. Middle femur 0.107 long by 0.036 wide. Middle tibia including tarsus 0.112 in length and 0.32 in width. Hind femur 0.140 long by 0.040 wide. Hind tibia including tarsus 0.245 in length and 0.034 in width. Abdomen 0.315 across at the broadest part. Wing 0.832 in length. Antenna 0.251 in total length; length-breadth ratio of joints: I, 0.021 : 0.022; II, 0.031 : 0.031; III, 0.070 : 0.018; IV, 0.045 : 0.018; V, 0.044 : 0.015.

Body dark brown; vertex, pterothorax and the tip of abdomen pale. Eyes dark brown. Ocelli pale yellow. Antennae orange yellow except the sixth segment which is light brown. Fore legs pale yellow; middle legs brown except tarsi and the bases of tibiae which are orange yellow; hind legs orange yellow exclusive of brown femora. Fore wings pale yellow, becoming gradually lighter towards the tip, with two brown longitudinal veins and two nearly brown cross-bands, one at the proximal fourth and the other at the distal fifth of the wing.

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Reticulation on the head distinct and hexagonal in front of the transverse ridge which is deeply emarginated near the posterior margin of the head, but less distinct and irregular behind the ridge, on the prothorax extremely heavy, presenting a number of minute dark spots here and there, on the prothorax faint and slightly transverse at the lateral margins. Femora and tibiae reticulated. The first abdominal tergite reticulated; tergites 2-8 reticulated at the base, excepting the mid-dorsal part where the wing is placed; the ninth and tenth with very faint hexagonal reticulation.

Head broader than long, irregular in contour; cheeks rather swollen, slightly notched behind the eyes. Vertex swollen between the eyes. The anterior margin of the head produced forwards between the eyes, covering the first antennal joint.

Eyes elliptical in dorsal view. Facets of eyes small and circular in outline. Interocular spines invisible; postocular spines absent. Interocular space about twice and half as wide as the eye; distance from the eye to the posterior margin of the head about as long as the eye. Ocelli three, difficult to recognize, as small as the facet, arranged in an equilateral triangle on the swollen vertex. Minute and transparent postocellar spines present.

Mouth cone not reticulated, obtusely rounded at the end, extending to near the hind end of the anterior fourth of the prosternum. Maxillary palpi two-jointed, the basal joint much thicker than the apical one, which has some inconspicuous sense hairs at the tip. Labial palpi short and transparent.

Antennae composed of six distinct joints, without style, about twice as long as the head; the first joint short and cylindrical, entirely hidden beneath the produced anterior margin of the head in dorsal view; the second thickest, reticulated and constricted at the base;

the third spindle-shaped, about twice as long as the fourth; the fifth as long as the sixth, narrowed at the base and widened at the distal end where it is squarely articulated to the following joint; the sixth tapering towards the tip from the basal third. Spines and hairs inconspicuous on the antennae exclusive of the last joint with some short hairs. Antennae with sense cones, one on the distal outer side of the third joint, two on the distal outer side of the fourth, very short one on the distal outer side of the fifth and two on the sides of the proximal part of the sixth, each being about three-fourths as long as the last joint.

Prothorax somewhat rectangular, as long as the head, wider than long, rounded at the angles and with spines short and inconspicuous. Pterothorax somewhat rectangular, wider than the head.

Wings present. Fore wing elongate-slender, about 18 times as long as wide at the middle, extending to the last abdominal segment. Two longitudinal veins present, branching at about the basal fourth of their length. Costa with 8 short dark spines; fore vein with 10 spines arranged in groups of 2, 3, 2 and 3 from the base to the tip; hind vein with 8 spines arranged more or less regularly; each spine about seven-tenths as long as the width of the wing at the middle. Costal fringe short, light yellow in colour; hind fringe long, slender and waved. Hind wing as long as the fore wing, devoid of any longitudinal vein and spine; costal fringe stout, and hind fringe thrice as long as the costal.

Legs normal, long and slender; anterior pair shortest, and posterior pair longest.

Abdomen elongate-oval, abruptly tapering from the eighth to the tenth segment which is tubular, wider than the head at the broadest part and about twice and half as long as wide. The first tergite with a row of long brown comb-like spines on the posterior

margin; tergites 2-8 with a row of similar spines on each side of the posterior margin and three pairs of inconspicuous spines near the posterior margin; the ninth segment with six stout spines on

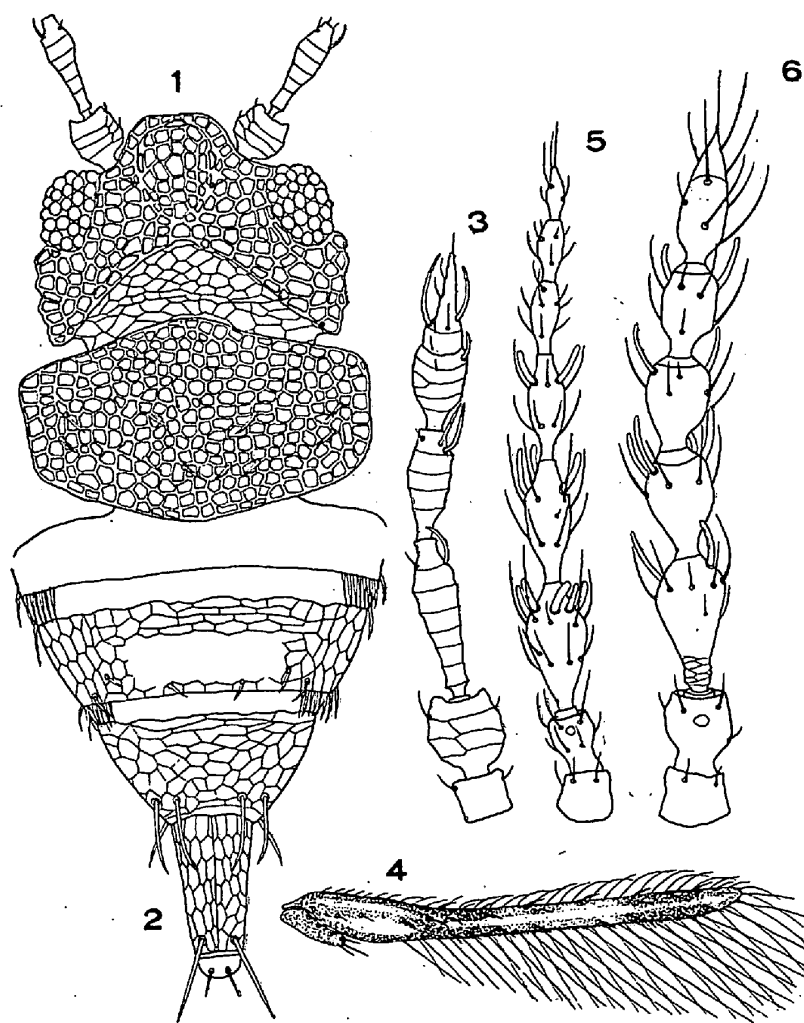


Fig. 1.

1. *Astrothrips aucubae* sp. nov. Head and thorax. $\times 180$.
2. Ditto. Abdominal segments 8-10. $\times 180$.
3. Ditto. Right antenna. $\times 180$.
4. Ditto. Right wing. $\times 60$.
5. *Ecacanthothrips inermatus* sp. nov. Right antenna. $\times 180$.
6. *Pygothrips nogutii* sp. nov. Right antenna. $\times 180$.

the posterior margin, each spine being about half as long as the segment; the tenth segment with a pair of slender and pointed spines at the tip and presenting a faint longitudinal furrow above at the middle. Ovipositor elongate-slender, not extending to the tip of the last abdominal segment.

Holotype, ♀, taken on *Aucuba japonica* on April 19, 1930, by the author. Paratype, 5 ♀♀.

Type locality: Mt. Takao near Tokyo.

All types in the author's collection except a paratype deposited in the collection of the Division of Entomology, Imperial Agricultural Experiment Station, Tokyo.

This species is most closely related to *Astrothrips globiceps* KARNY from New Britain, but it is easily distinguished from this by the existence of bands on the wings, the relative length of antennae, the number of sense cones as well as by the possession of distinct ocelli and two-jointed maxillary palpi.

***Pygothrips nogutii* sp. nov.**

(Fig. 1, 6; Fig. 2.)

(Japanese name: *Noguti-kudazamiumanodoki*)

Male:—Measurements in mm.: Total body-length 2.2. Head 0.199 in length and 0.235 in width. Prothorax 0.181 long by 0.461 wide. Pterothorax 0.507 in width. Fore femur 0.235 in length and 0.127 in width. Fore tibia including tarsus 0.235 in length and 0.054 in width. Middle femur 0.181 long by 0.054 wide. Middle tibia including tarsus 0.276 in length and 0.040 in width. Hind femur 0.163 in length and 0.073 in width. Hind tibia including tarsus 0.344 long by 0.045 wide. Fore wing 1.086 long by 0.107 across at the middle. Antenna 0.434 in total length;

length-breadth ratio of joints : I, 0.032: 0.045; II, 0.054: 0.041; III, 0.086: 0.041; IV, 0.068: 0.043; V, 0.059: 0.038; VI, 0.054: 0.038; VII + VIII, 0.085: 0.027. Tenth abdominal segment 0.217 in length, 0.145 across at the base and 0.031 across at the tip.

Body dark chestnut brown; abdomen darker in its distal half. Eyes deep red to black. Ocelli with a deep red crescent patch. Antennal segments orange yellow in the first and second and yellow from the third to the fifth; the third shaded with pale brown in its outer third; the fourth somewhat darker in outer half than the third; the fifth shaded with brown in its outer two-thirds; the sixth to the eighth brown. Fore femora and tibiae orange yellow, the former shaded with brown in the basal half, the latter shaded with brown along the outer and inner margins; all tarsi orange yellow. Middle femora brown, lighter in the distal third; middle and hind tibiae brown. Hind femora orange yellow, shaded with brown along the outer margins. Fore wing whitish brown, hind wing paler than the former, wings fringed with pale brown. Spines pale brown on the body except at the end of the abdomen, where they are orange yellow.

Head rectangular, a little wider than long, almost straight at the anterior margin; vertex smooth, elevated; cheeks subparallel, with two minute setae. Eyes spherical in dorsal view, not protruded and pilose. Eyes one-third as long as the head and about two-thirds as wide as their interval. Facets of the eyes small and circular in outline. Interocellar spines very small, inconspicuous; postocular spines very long and about twice as long as the eye, exclusive of the second ones which are short. Ocelli three, large, arranged in an equilateral triangle near the anterior margin of the head.

Mouth cone rounded at the tip, extending to near the hind end

of the anterior fourth of the prosternum. Maxillary palpi two-jointed, the basal joint as long as wide, the apical joint three times as long as wide. Labial palpi two-jointed, very short.

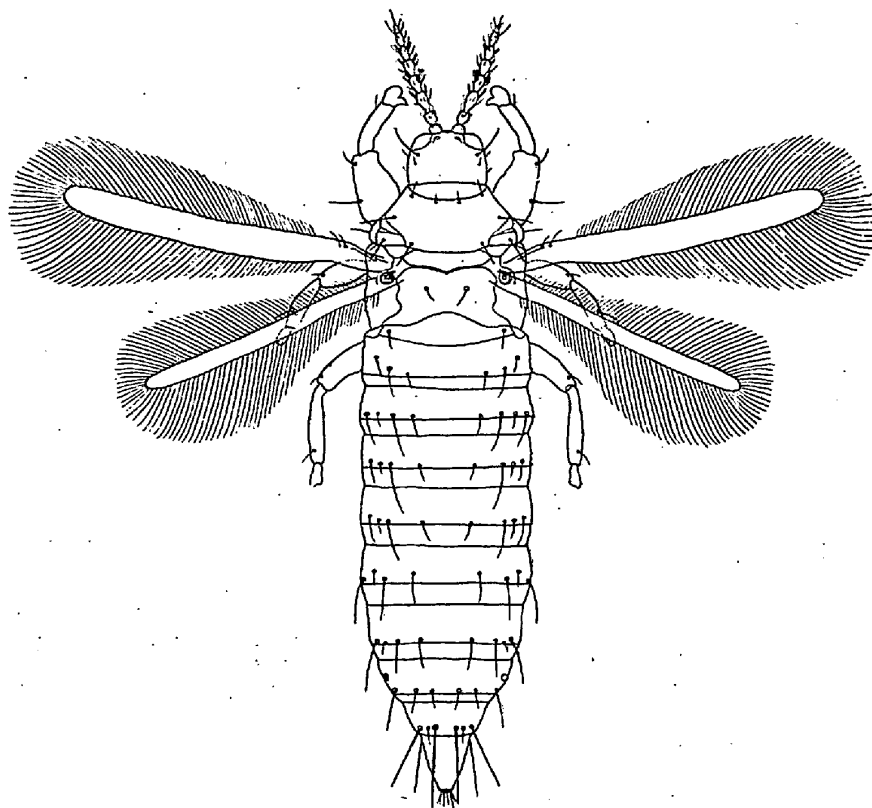


Fig. 2.

Pygothrips nogutii sp. nov. $\times 35$.

Antennae composed of eight distinct joints, about twice as long as the head, the first joint short and cylindrical; the second thickest, constricted at the base, with a round sense area in front of the middle on the dorsal side; the third subconical, with weak wrinkles in the basal part; the fourth to the sixth oval, pedicellate; the seventh closely united with the eighth, forming a lanceolate joint. Sense cones nearly straight, transparent, located near the tip of the joints as follows: two on the third, four on the fourth, two on

each of the fifth to the sixth. Spines on antennal segments moderately long, slender and pale brown.

Prothorax somewhat trapezoid, as long as the head, about two times and half as wide as long, with ordinary prothoracic spines as well as with short anterior marginal and mid-lateral spines; posterior angle and marginal spines very long, about half as long as the prothorax. Spines on the projection of the coxae long and stout. Pterothorax rather rectangular, two times as wide as the head; metanotal plate with two shortly curved spines; metathoracic stigmata very distinct.

Wings present. Fore wing long, not constricted at the middle, about ten times as long as wide at the middle, without the duplicate hairs; the costal fringe as long as the hind. Hind wing similar in shape to the fore wing but somewhat slender.

Legs normal; fore femora stout, with two long spines on the outer margins, fore tarsi armed with a strong tooth. Middle and hind femora and all tibiae with a long spine on the outer side near the tip.

Abdomen elongate-oval; the last segment conical; each abdominal tergite very transverse, four times or more as wide as long. Abdominal tergites from the second to the eighth with three pairs of conspicuous spines on the posterior margin; the eighth tergite with a pair of stigmata on the mid-lateral margin; the ninth with a circlet of six long stout spines on the posterior margin, each spine about as long as the tenth segment; the tenth covered with minute spine-bearing warts. Terminal spines very short.

Holotype, ♂, found in the hole of a citrus tree bored by a Cerambicid larva on November 24, 1930, by Mr. T. NOGUTI. Paratype, ♂.

Typ: locality: Sizuoka-ken.

Holotype in the author's collection; paratype deposited in the col-

lection of the Division of Entomology, Imperial Agricultural Experiment Station, Tokyo.

This species is most closely related to *Pygothrips metalicauda* KARNY from Java, but it is easily distinguished from this by the different colouration and relative length of the antennal joints, as well as by the possession of the head wider than long, the second postocular spines and four similar simple sense cones on the fourth antennal joint.

Ecacanthothrips inarmatus sp. nov.

(Fig. 1, 5; Fig. 3.)

(Japanese name : *Togenasi-kudazamiuma*)

Female :—Measurements in mm. : Total body-length 2.79. Head 0.37 in length and 0.267 in width. Prothorax 0.204 in length and 0.502 in width, including coxa. Pterothorax 0.502 in width. Fore femur 0.362 long by 0.141 wide. Fore tibia including tarsus 0.362 in length and 0.055 in width. Middle femur 0.236 long by 0.063 wide. Middle tibia including tarsus 0.345 in length and 0.047 in width. Hind femur 0.333 long by 0.087 wide. Hind tibia including tarsus 0.362 long by 0.047 wide. Fore wing 1.368 in length and 0.105 in width. Total length of antennae 0.661; length-breadth ratio of joints : I, 0.051 : 0.047; II, 0.062 : 0.043; III, 0.125 : 0.062; IV, 0.117 : 0.041; V, 0.106 : 0.035; VI, 0.086 : 0.031; VII, 0.066 : 0.023; VIII, 0.047 : 0.018. Tube 0.204 in length, 0.077 in width at the base and 0.047 at the tip. Length of spines : 0.062 on the anterior margin of prothorax, 0.094 at the anterior angles, 0.094 on the mid-lateral margin, 0.098 at the posterior angles, 0.125 on the posterior margin, 0.051 on the prominent coxa, 0.140 on the posterior margin of the ninth abdominal segment, 0.191 at the tip of the tube.

Head and prothorax brownish yellow; pterothorax darker; abdomen light brownish yellow except the distal third of the abdomen which is dark brown. Antennal joints brown in the first and second, pale brownish yellow in the third, yellow from the fourth to the seventh, in which the distal part is gradually shaded with brown, and brown in the eighth. Sense cones on the third joint of the antennae pale grey. Eyes dark red. Ocelli yellow, with a red crescent patch. Fore coxa brown; fore femora brownish yellow, except the outer margin tinged with brown; fore tibiae and fore tarsi brownish yellow. Middle and hind legs brown except tarsi which are pale brownish yellow. Fore wing almost transparent, pale brown at the extreme base and tinged with whitish brown along a longitudinal vein. Hind wing transparent, with a pale brownish yellow longitudinal vein. All spines on the body and fringes of the wings pale brown.

Head faintly reticulated, about one time and half as long as wide; vertex somewhat conically produced between the eyes, the apex not reaching the anterior margin of the head. Cheeks considerably widened behind the eyes, subparallel, and with short spine-bearing warts.

Eyes rather elliptical in dorsal view, about three times and half as long as the head, and about as wide as their interval. Post-ocular spines long, stout, knobbed at the tip, and about as long as the eyes. Ocelli large, the diameter about three times that of the facet of eyes; anterior ocellus lying at the extreme vertex; posterior ocelli situated in front of the middle of the eyes.

Mouth cone sharply pointed at the tip, extending to the posterior margin of prosternum. Labium broadly rounded; labrum pointed, extending over the labium. Maxillary palpi three-jointed and slender; the basal joint very short, the middle joint very long and twice as

long as the apical. Labial palpi two-jointed and slender.

Antennae slender, eight-jointed, about twice as long as the head; the first almost cylindrical, about as long as wide; the second

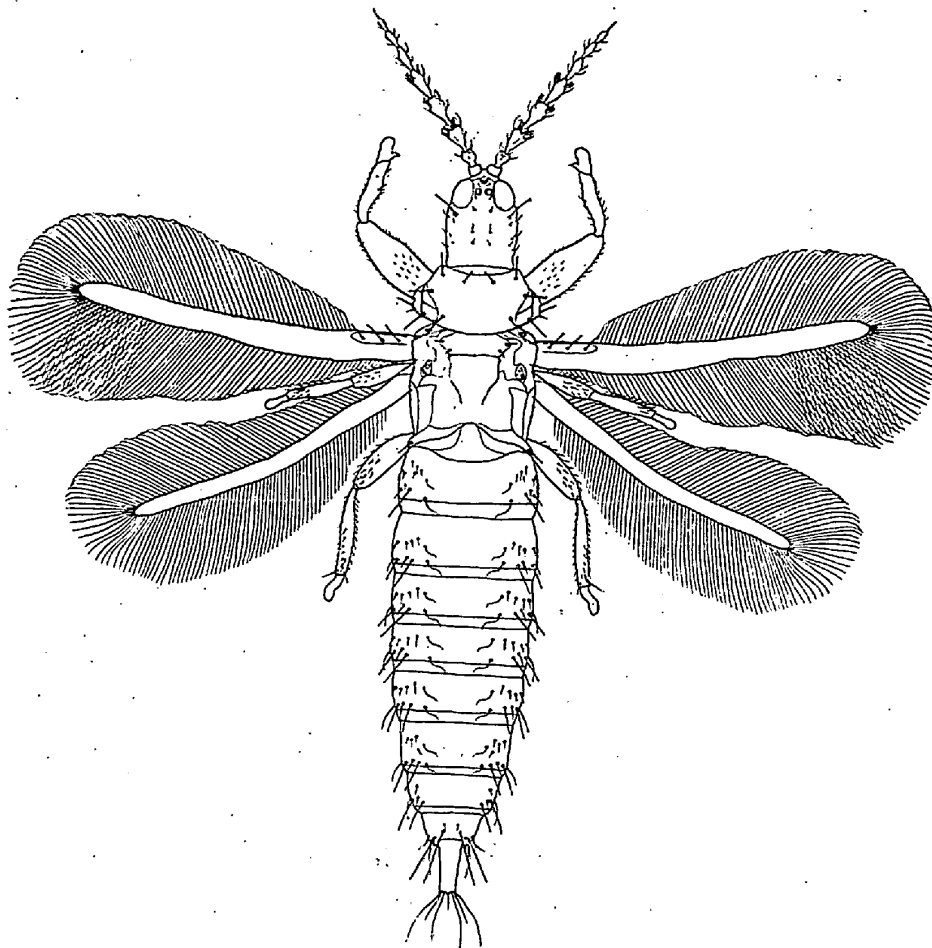


Fig. 3.

Ecacanthotetraps inermatus sp. nov. $\times 30$.

barrel-shaped, with a round sense area near the anterior margin on the dorsal side; the third subconical, pedicellate; the fourth to the seventh spindle-shaped; the eighth lanceolate. Spines on the antennae distinct. Sense cones moderately long, rounded at the tip, 10 in a row on the third, three on the fourth and two on the fifth.

Prothorax weakly reticulated, rather trapezoid, about five-tenths as long as the head, and with ordinary prothoracic spines which are long, stout and dilated at the tip. Pterothorax normal, about as wide as the prothorax; mesonotum reticulated, with two stout knobbed spines; metanotum and pleurae somewhat reticulated; metathoracic stigmata large and distinct. Wings present. Fore wing long, about thirteen times as long as wide at the middle, with fringes of which the costal are as long as the hind, exhibiting twenty double fringes along the posterior margin near the tip and three long knobbed spines arranged in a row on the anterior margin at the base. Hind wing slender and similar in shape to the fore wing.

Legs slender; all femora and tibiae with minute spines; fore tarsi armed with a sharp tooth.

Abdomen rather elongate-slender, cylindrical but tapering backwards from the seventh segment. The first tergite with two knobbed spines at each posterior corner. Abdominal segments from the second to the eighth with three long knobbed spines on each side of the posterior margin, from the second to the seventh with two long, twice-curved spines dorsally on each side of the middle line. The ninth segment with six long stout knobbed spines on the posterior margin, each spine about three-fifths as long as the tube. Tube with six spines pointed at the tip and longer than the tube itself.

Holotype, ♀, found in the hole of a citrus tree bored by a Cerambycid larva on November 24, 1930, by Mr. T. NOGUTI. Paratype, ♀.

Type locality: Sizuoka-ken, Japan.

Holotype in the author's collection; paratype deposited in the collection of the Division of Entomology, Imperial Agricultural Experiment Station, Tokyo.

This species is closely related to *Ecacanthothrips bagnalli* PRIESNER

from the Malay Archipelago and *Ecacanthothrips coniger* PRIESNER from East-Borneo, but it may be easily distinguished from the former by the number of sense cones on the third antennal joint and the absence of a stout tooth on the distal inner margin of the fore femora and on the basal inner margin of the fore tibia, and from the latter by the number of sense cones on the antenna and the relative length of the antennae.

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